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10/810,531

03/26/2004

Robert Denk

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BAKER BOTTS L.L.P.

PATENT DEPARTMENT

98 SAN JACINTO BLVD., SUITE 1500

AUSTIN, TX 78701-4039

EXAMINER

DO, CHAT C

ART UNIT

PAPER NUMBER

2193

MAIL DATE

DELIVERY MODE

05/02/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/810,531

Applicant(s)

DENK, ROBERT

Examiner

Chat C. Do

Art Unit

2193

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 March 2004 and 15 June 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 03/26/2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the limitations cited in independent claims 1 and 14 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. The disclosure is objected to because of the following informalities:

The applicant is advised to update information cited under the "Cross Reference to Related Application" section in page 2 of original specification as necessary.

Appropriate correction is required.

Claim Objections

3. Claims 1, 4, 7-8, 17, and 19-20 are objected to because of the following informalities:

Re claim 1, the phrase "of a end state" should be "of an end state".

Re claim 4, the acronym "MSRG" should be written in full for clarification.

Claim 17 has the same objection.

Re claim 7, the acronym "SSRG" should be written in full for clarification. Claim 19 has the same objection.

Re claim 8, the acronyms "CDMA" and "UMTS" should be written in full for clarification. Claim 20 has the same objection.

Appropriate correction is required.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claims 1-7 and 14-19 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 1-7 and 14-19 cite a method and apparatus for determining an end state in accordance with a mathematical algorithm. In order for claims to be statutory, claims must either include a practical/physical application or a concrete, useful, and tangible result. However, claims 1-7 and 14-19 merely disclose mathematical steps/components for determining an end state without further disclosing a practical/physical application or a useful and tangible result. Therefore, claims 1-7 and 14-19 are directed to non-statutory subject matter.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-24 are rejected under 35 U.S.C. 102(b) as being anticipated by Jhong et al. (“CDMA Systems Engineering Handbook”).

Re claim 1, Jhong et al. disclose a method for determination of a end state, which has n bits and is iterated N times, of a shift register arrangement from a given initial state, which has n bits, of the shift register arrangement (e.g. first paragraph in page 543), with the iteration rule for the shift register arrangement being given by the characteristic polynomial $f(x) = 1 + c_{sub.1} \cdot x + c_{sub.2} \cdot x^2 + \dots + c_{sub.n-1} \cdot x^{n-1} + x^n$ where $c_{sub.1}, c_{sub.2}, \dots, c_{sub.n-1} \in \{0;1\}$ (e.g. standard $f(x)$ in section 6.3 Shift register implementation of PN sequences in page 576),

comprising the following steps: a) determining the polynomial $f^*(x) = 1 + c_{n-1} \cdot x + c_{n-2} \cdot x^2 + \dots + x^n$ by reflecting of the coefficients of the polynomial $f(x) = 1 + c_1 \cdot x + c_2 \cdot x^2 + \dots + c_{n-1} \cdot x^{n-1} + x^n$ (e.g. $f^*(\beta)$ in pages 584-585 wherein f^* is reciprocal of f); b) for $j=1, \dots, n$, determining that representative of the remaining class $[x^{N+j-1}] \bmod f^*$, whose degree is less than n (e.g. table 6.14 in page 585); c) multiplying the bit sequence of the initial state by a matrix whose j -th row or j -th column for $j=1, \dots, n$ is given by the coefficients of the representative of the remaining class $[x^{N+j-1}] \bmod f^*$ as determined in step b) (e.g. transition matrix in page 586).

Re claim 2, Jhong et al. further disclose the representatives of the remaining classes $[x^N] \bmod f^*, [x^{N+1}] \bmod f^*, \dots, [x^{N+n-1}] \bmod f^*$ are each calculated explicitly by means of a suitable algorithm, in particular by means of a square and multiply algorithm (e.g. table 6.14 in page 585).

Re claim 3, Jhong et al. further disclose only the representative of the remaining class $[x^N] \bmod f^*$ is calculated explicitly by means of a suitable algorithm, in particular by means of a square and multiply algorithm, and in that the representatives of the remaining classes $[x^{N+j-1}] \bmod f^*$ where $j=2, \dots, n$ are obtained by $(n-1)$ calculated iterations from the coefficients of the representative of the remaining class $[x^N] \bmod f^*$ (e.g. by means of shifting manipulation as seen in table 6.14 in page 585).

Re claim 4, Jhong et al. further disclose the representatives of the remaining classes $[x^{N+j-1}] \bmod f^*$ where $j=2, \dots, n$ are obtained by $(n-1)$ calculated iterations

of a shift register arrangement of the MSRG type from the coefficients of the representative of the remaining class $[x.\text{sup}.N] \bmod f^*$ where the iteration rule for the shift register arrangement is given by the characteristic polynomial $f^*(x) = 1 + c.\text{sub}.n-1.\text{multidot}.x + c.\text{sub}.n-2.\text{multidot}.x.\text{sup}.2 + \dots + x.\text{sup}.n$ (e.g. page 584 first three paragraphs).

Re claim 5, Jhong et al. further disclose the end state, which has n bits and is iterated N times, is used as an initialization state for the production of a pseudo-noise sequence which is shifted through N bits (e.g. table 6.14 in page 585).

Re claim 6, Jhong et al. further disclose the end state, which has n bits and is iterated N times, is written as the initialization state to a shift register arrangement which comprises n shift register cells (e.g. Figure 6.15 in page 584).

Re claim 7, Jhong et al. further disclose the shift register arrangement is a shift register arrangement of the SSRG type which comprises n shift register cells and whose structure is given by the characteristic polynomial $f(x) = 1 + c.\text{sub}.1.\text{multidot}.x + c.\text{sub}.2.\text{multidot}.x.\text{sup}.2 + \dots + c.\text{sub}.n-1.\text{multidot}.x.\text{sup}.n-1 + x.\text{sup}.n$ (e.g. Figure 6.16 in page 590).

Re claim 8, Jhong et al. further disclose the method is used in order to produce a spreading sequence with an offset of N bits in CDMA transmission systems, in particular CDMA transmission systems based on the UMTS or IS-95 transmission standards (e.g. fourth paragraph in page 545).

Re claim 9, Jhong et al. further disclose the method is used for production of the scrambling codes which are defined in the UMTS standard (e.g. pages 543-545).

Re claim 10, Jhong et al. further disclose the spreading sequence is used for transmitter-end spread coding of the transmitted signals (e.g. pages 543-545).

Re claim 11, Jhong et al. further disclose the spreading sequence is used for receiver-end decoding of the received signals (e.g. pages 543-545).

Re claim 12, Jhong et al. further disclose the spread coding is started in the CDMA transmission system at a different time than the signal transmission, with the end state, which has n bits and is iterated N times, being used as the initialization state for the production of the time-shifted spreading sequence (e.g. Figure 6.23 in page 602).

Re claim 13, Jhong et al. further disclose a given code number defines the offset of a spreading sequence, with the end state, which has n bits and is iterated N times, being used as the initialization state for the production of the spreading sequence which is associated with the code number N (e.g. Figure 6.23 in page 602).

Re claim 14, it is an apparatus claim of claim 1. Thus, claim 14 is also rejected under the same rationale as cited in the rejection of rejected claim 1.

Re claim 15, it is an apparatus claim of claim 2. Thus, claim 15 is also rejected under the same rationale as cited in the rejection of rejected claim 2.

Re claim 16, it is an apparatus claim of claim 3. Thus, claim 16 is also rejected under the same rationale as cited in the rejection of rejected claim 3.

Re claim 17, it is an apparatus claim of claim 4. Thus, claim 17 is also rejected under the same rationale as cited in the rejection of rejected claim 4.

Re claim 18, it is an apparatus claim of claim 6. Thus, claim 18 is also rejected under the same rationale as cited in the rejection of rejected claim 6.

Re claim 19, it is an apparatus claim of claim 7. Thus, claim 19 is also rejected under the same rationale as cited in the rejection of rejected claim 7.

Re claim 20, it is an apparatus claim of claim 8. Thus, claim 20 is also rejected under the same rationale as cited in the rejection of rejected claim 8.

Re claim 21, it is an apparatus claim of claim 10. Thus, claim 21 is also rejected under the same rationale as cited in the rejection of rejected claim 10.

Re claim 22, it is an apparatus claim of claim 11. Thus, claim 22 is also rejected under the same rationale as cited in the rejection of rejected claim 11.

Re claim 23, it is an apparatus claim of claim 12. Thus, claim 23 is also rejected under the same rationale as cited in the rejection of rejected claim 12.

Re claim 24, it is an apparatus claim of claim 13. Thus, claim 24 is also rejected under the same rationale as cited in the rejection of rejected claim 13.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. U.S. Patent No. 6,556,555 to Miller et al. disclose a method for calculating the PN generator mask to obtain a desired shift of the PN code.
- b. U.S. Patent No. 6,282,181 to Stark et al. disclose a pseudorandom number sequence generation in radiocommunication systems.
- c. U.S. Patent No. 5,532,695 to Park et al. disclose a power of two length pseudorandom noise sequence generator.

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- d. U.S. Patent No. 6,640,236 to Lupin et al. disclose a method and apparatus for generating multiple bits of a pseudonoise sequence with each clock pulse by computing the bits in parallel.
- e. U.S. Patent No. 6,822,999 to Lee et al. disclose a high-speed cell searching apparatus and method for communication system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chat C. Do whose telephone number is (571) 272-3721. The examiner can normally be reached on M => F from 7:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on (571) 272-3756. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chat C. Do
Examiner
Art Unit 2193

April 25, 2007

